

CLAIMS:

- Sub a1
1. A medical device for long-term implantation comprising:  
a reservoir comprising (a) a polymer matrix and (b) an antimicrobial agent disposed within said polymer matrix, said reservoir adapted for long-term release of said antimicrobial agent from said polymer matrix; and  
a surfactant region disposed over said reservoir at an outer surface of said device.
  2. The medical device of claim 1, wherein said surfactant is a biosurfactant.
  3. The medical device of claim 2, wherein said biosurfactant is selected from glycolipids, lipopeptides, depsipeptides, phospholipids, substituted fatty acids, and lipopolysaccharides.
  4. The medical device of claim 2, wherein said biosurfactant is selected from surfactin, surfactin, viscosin and rhamnolipids.
  5. The medical device of claim 1, wherein said surfactant is a surfactant polymer.
  - Sub a2  
6. The medical device of claim 5, wherein said surfactant polymer is a surfactant polymer having a poly(vinyl amine) backbone and having hydrophilic poly(ethylene oxide) and hydrophobic hexanal side chains.
  - Sub B1  
7. The medical device of claim 1, wherein said surfactant is linked by one or more interactions selected from hydrophobic interactions, ionic interactions and covalent interactions.
  - Sub a3  
8. The medical device of claim 1, wherein said medical device is selected from a ureteral stent and a urethral catheter.

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9. The medical device of claim 1, wherein said antimicrobial agent is selected from triclosan, chlorhexidine, silver sulfadiazine, silver ions, benzalkonium chloride and zinc pyrithione.

10. The medical device of claim 1, wherein said antimicrobial agent is a broad-spectrum antibiotic.

11. The medical device of claim 1, wherein said antimicrobial agent is an antiseptic agent.

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12. The medical device of claim 1, wherein said antiseptic agent is iodine.

13. The medical device of claim 1, further comprising a barrier layer disposed between said polymer matrix and said surfactant region.

14. The medical device of claim 1, wherein said polymer matrix comprises a polymer selected from an ethylene-vinyl acetate copolymer and a polyurethane.

15. A method of treatment comprising:

providing a medical device, said medical device comprising (a) a reservoir comprising a polymer matrix portion and an antimicrobial agent disposed within said polymer matrix portion and (b) a surfactant region disposed over said reservoir at an outer surface of said device; and

implanting said medical device within the body of a patient for a period of at least three months.

Sub B1  
16. The method of claim 15, wherein said surfactant is a biosurfactant.

17. The method of claim 15, wherein said surfactant is a surfactant polymer.

18. The method of claim 15, wherein said medical device is selected from a ureteral stent and a urethral catheter.

19. The method of claim 15, wherein said polymer matrix comprises a polymer selected from an ethylene-vinyl acetate copolymer and a polyurethane.

20. The method of claim 15, wherein said device is implanted in a urine-contacting area.

21. A method of constructing a medical device comprising:  
forming a reservoir comprising (a) a polymer matrix portion and (b) an antimicrobial agent disposed within said polymer matrix portion; and  
providing a surfactant region over said reservoir at an outer surface of said device.

22. The method of claim 21, wherein said antimicrobial agent is disposed within said polymer matrix at the time of formation of said polymer matrix.

23. The method of claim 22, wherein said antimicrobial agent is co-cast with said polymer matrix.

24. The method of claim 22, wherein said antimicrobial agent is co-extruded with said polymer matrix.

25. The method of claim 21, wherein said antimicrobial agent is provided within said polymer matrix by imbibing said antimicrobial agent into said polymer matrix.

26. The method of claim 21, wherein said surfactant is a biosurfactant.

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27. The method of claim 21, wherein said surfactant is a surfactant polymer.

28. The method of claim 21, wherein said surfactant is covalently linked at said outer surface of said device.

29. The method of claim 21, wherein said antimicrobial agent is selected from triclosan, chlorhexidine, silver sulfadiazine, silver ions, benzalkonium chloride and zinc pyrithione.

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